REMARKS

Applicants note with appreciation the interview courteously afforded the undersigned counsel for the Applicants on October 6, 2005, at which the Examiner's supervisor also was present. At the interview, the rejection of claims 1-3 under 35 U.S.C. §102(e) as being anticipated by Tachizaki was discussed, and the arguments in support of patentability, which are summarized below, were presented. The Examiner agreed at the interview that claims 1-3 are not anticipated by the Tachizaki reference.

As set forth in claim 1, a plurality of reference measurements are obtained by irradiating a plurality of different phantoms, each being irradiated with a different radiation attenuation, so that a computed tomography image of each different phantom is produced. In the Tachizaki reference, however, there is no computed tomography image formed using any phantom. Moreover, Tachizaki does not employ different phantoms, and Tachizaki does not obtain reference measurements for different phantoms with respectively different radiation attenuation.

In the method disclosed in the Tachizaki reference, the first step is to form a scannogram of the examination subject. The generation of the scannogram is completed before the start of a scan for acquiring data for a computed tomography image of the subject, as stated at column 1, lines 15-19, column 7, lines 25-29, and column 10, lines 29-34 and 60-64 in the Tachizaki reference, and also as indicated in Figure 8 thereof. A scannogram is not a computed tomography image, but is comparable to a 2D fluoroscopy image, as is also explained in the Tachizaki reference at column 7, lines 30-40 (no rotation of the x-ray tube, no tomographic reconstruction). An example of such a scannogram image is shown in Figure 6.

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From this scannogram, an absorptance map is calculated, as explained in column 7, lines 2-123 and column 8, lines 26-31. When calculating this absorptance map, it is necessary to know the intensity I_{in} of the incident radiation in order to derive the attenuation values μ from the measured attenuation radiation ($I_{out} = I_{in} \cdot \exp(-\mu t)$, as indicated in column 8, line 22 of the Tachizaki reference. For this purpose, Tachizaki therefore obtains a scannogram of the examination volume without the examination subject therein, which is referred to in the Tachizaki reference as an "air phantom" (column 7, lines 57-62). The reference data of this "air phantom" measurement provide the intensity of the incident radiation I_{in}. As an alternative, the initial intensity value can be obtained with the compensatory detector 3 (column 8, lines 53-54). This measurement without an object is a scannogram, but not a computed tomography image. Moreover, the data comprising this scannogram are not used to limit the tube current of the x-ray tube when subsequently obtaining a computed tomography image of the subject, but are used only to obtain the attenuation values for the aforementioned absorptance map.

From this two-dimensional absorptance map, imaging conditions are determined in accordance with the position of the x-ray tube along the longitudinal axis of the subject, and the angulation with regard to the body axis, by making an approximate calculation of the diameter of a virtual phantom that is substantially equivalent to the examination subject, as explained at column 8, line 65 through column 9, line 3 of Tachizaki. Because the absorptance map is only a two-dimensional map, a simplified form of the subject must be assumed in order to calculate the thickness of the object at the different angle directions (projection directions). Therefore, Tachizaki assumes that the cross-section of the subject is

similar to the cross-section of an elliptical phantom (virtual phantom). Because the diameter is known in one direction from the scannogram, the diameter in the other direction can be calculated. The thickness of the object is calculated assuming a water phantom at the position of the subject, so that the thickness in the direction in which the scannogram was obtained can be calculated from the measured attenuation data. Tachizaki, however, does not use, nor acquire data from, any real (physical) phantom in this calculation step, nor are any computed tomography images obtained with such a phantom in place.

This calculation leads to a tube current pattern for operating the x-ray tube during the acquisition of tomography data. The passage at column 6, lines 1-9, cited by the Examiner, clearly relates to the reconstruction of the computed tomography image of the subject and this step, for the reasons set forth above, is clearly performed only *after* storing the tube current pattern used to control the tube current. Moreover, the passage at column 6, lines 10-15, also cited by the Examiner, refers only to the display of different results, and column 8, lines 32-37, also cited by the Examiner, refers to image reconstruction on the basis of the scannogram which, as noted above, is not a computed tomography image.

A further embodiment is disclosed in the Tachizaki reference at column 2, line 10 through column 13, line 56. This embodiment, however, involves only a determination of the size of the examination subject on the basis of the scannogram (again, generated before undertaking a tomographic data acquisition) and to the adjustment of the quantity of x-rays dependent on the size of the subject (column 12, lines 11-16). This is a very course approximation, and only the size of the object is determined in order to select an appropriate x-ray dose for the subsequent computed

tomography scan. As in the previously-discussed embodiment, there are no computed tomography images respectively obtained using a plurality of phantoms with respectively different radiation attenuation in this second embodiment.
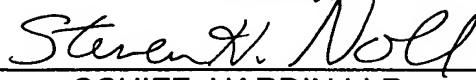
In all embodiments disclosed in the Tachizaki reference, therefore, a scannogram must be obtained as a first step, in order to calculate an appropriate tube current pattern for the subsequent computed tomography scan of the subject. In the inventive method, no such scannogram has to be obtained, since the data for a plurality of different phantoms with respectively different attenuation data are valid for all patients to be examined, and thus have to be obtained only once. When performing a computed tomography scan of a particular subject, the values for the tube current are automatically online by comparing the measured attenuation values of the patient with the stored attenuation values obtained from the various phantoms, and the tube current is then set to be the same as the tube current that was used for the most similar phantom. Moreover, this tube current has been optimized in order to produce a predetermined noise level in the image.

For these reasons, none of claims 1-3 is anticipated by the Tachizaki reference.

The Examiner also noted a typographical error in claim 1 which has been corrected.

All claims of the application are therefore submitted to be in condition for allowance.

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